German is a language spoken natively in Western Europe by approximately 100 million people. It is a Western Germanic language, and is closely related to Dutch, Afrikaans, English, and the Scandinavian languages. Any student of German must learn a few crucial facts before beginning an analysis of the language. First off, let’s clarify some questions regarding German orthography and phonology. The German language dictates that nouns be capitalized in all positions throughout the sentence. In contrast to English, this means that proper nouns and regular nouns are not distinguished simply by capitalization. This will not be extremely important here, but this knowledge will facilitate an ease of interpretation of the data to come. The German consonants are pronounced the same as their English counterparts with two exceptions. The orthographic consonant cluster /ch/ has two realizations in German, [x] and [ç]. Forms pronounced like Fach ‘compartment’ take the [x] phoneme /fa:x/ and those like ich ‘I,’ are pronounced with the cedilla, /ɪç/. There is a generalization that the [ç] phoneme appears after front vowels, and that [x] occurs after back vowels. This will not be a major part of this problem, but the phonology may factor in at some point. German also has a few umlauted vowels, whose phonetic transcriptions I have included below, and some diphthongs. Unless otherwise stated, German vowel orthography generally corresponds to the IPA symbol.

<table>
<thead>
<tr>
<th>ä</th>
<th>ü</th>
<th>ö</th>
<th>ei</th>
<th>au</th>
<th>eu</th>
</tr>
</thead>
<tbody>
<tr>
<td>ɛ̃</td>
<td>ỹ</td>
<td>õ</td>
<td>aɪ</td>
<td>aʊ</td>
<td>ɔʏ</td>
</tr>
</tbody>
</table>

German also has three genders for its nouns: Masculine, Feminine and Neuter. These are most easily recognized through the articles that accompany nouns. These nouns, along with the plurals, can occur in four distinct cases, the nominative, accusative, dative and genitive.

**Part I: Fun with German Nouns**

A. Below are some German nouns and their determiners in the nominative case, and their corresponding plural forms:

<table>
<thead>
<tr>
<th>Masculine</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>der Fisch</td>
<td>die Fische</td>
</tr>
<tr>
<td>der Bart</td>
<td>die Bärte</td>
</tr>
<tr>
<td>der Gans</td>
<td>die Gänse</td>
</tr>
<tr>
<td>der Hund</td>
<td>die Hunde</td>
</tr>
<tr>
<td>der Tag</td>
<td>die Tagen</td>
</tr>
<tr>
<td>Singular</td>
<td>Plural</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>der Wolf</td>
<td>die Wölfe</td>
</tr>
<tr>
<td>der Ritter</td>
<td>die Ritter</td>
</tr>
<tr>
<td>der Apfel</td>
<td>die Äpfel</td>
</tr>
<tr>
<td>der Kaffee</td>
<td>die Kaffee</td>
</tr>
<tr>
<td>die Katze</td>
<td>die Katzen</td>
</tr>
<tr>
<td>die Ente</td>
<td>die Enten</td>
</tr>
<tr>
<td>die Stadt</td>
<td>die Städte</td>
</tr>
<tr>
<td>die Sage</td>
<td>die Sagen</td>
</tr>
<tr>
<td>die Mutter</td>
<td>die Mütter</td>
</tr>
<tr>
<td>die Maus</td>
<td>die Mäuse</td>
</tr>
<tr>
<td>die Kröte</td>
<td>die Kröten</td>
</tr>
<tr>
<td>die Haut</td>
<td>die Haute</td>
</tr>
<tr>
<td>das Schwein</td>
<td>die Schweine</td>
</tr>
<tr>
<td>das Mädchen</td>
<td>die Mädchen</td>
</tr>
<tr>
<td>das Eichhörnchen</td>
<td>die Eichhörnchen</td>
</tr>
<tr>
<td>das Volk</td>
<td>die Völker</td>
</tr>
<tr>
<td>das Einhorn</td>
<td>die Einhörner</td>
</tr>
<tr>
<td>das Gerät</td>
<td>die Geräte</td>
</tr>
<tr>
<td>das Seepferdchen</td>
<td>die Seepferdchen</td>
</tr>
<tr>
<td>das Handy</td>
<td>die Handys (phonetically: /han.di/)</td>
</tr>
<tr>
<td>das Pferd</td>
<td>die Pferde</td>
</tr>
<tr>
<td>das Kaninchen</td>
<td>die Kaninchen</td>
</tr>
<tr>
<td>das Märchen</td>
<td>die Märchen</td>
</tr>
<tr>
<td>das Bild</td>
<td>die Bilder</td>
</tr>
</tbody>
</table>

Can you say anything reasonable about the plural forms? Is it regular? If not, how many forms are there? Is there anything unifying about which nouns take which plural?

**B. Diminutives**

German has a regular suffix that forms the diminutive. This suffix is extremely productive, and can be attached to virtually every noun. In most cases, the addition of this affix serves no other purpose than to express a form of endearment or the smallness of the object in question. Sometimes, especially in the cases of animal names, the diminutive is the accepted term for the baby animal.

das Schweinchen ‘the little piggy’
Das Entchen
‘the duckling’
Das Handychen
‘the little cell phone’
Das Kätzchen
‘the kitten’
Das Städtchen
‘the small town’
*Die Mäuschen
(bad when ‘die’ is singular)
Das Tägchen
‘the little day’
Das Wölfchen
‘the little wolf’
*Der Fischchen
Das Gänsechen
‘the gosling’
*Der Bärtchen
Das Mütterchen
‘the little mother (‘mommy dearest’)
Das Hündchen
‘the puppy’
Das Sägchen
‘the little legend’
*Das Märchenchen
*Das Kaninchenchen
*Das Eichhörnchenchen

What is the diminutive suffix? Does your analysis account for the badness of the starred forms? Are all the starred forms ungrammatical in the same way? Can you hypothesize the correct forms of ‘the little mouse,’ ‘the little fish’ and ‘the little moustache’? Why might *Kaninchenchen be bad?

C. A Thought on Compounds

German has a very productive noun-noun compounding process. Here are few simple examples of this process.

das Wort
‘the word’
der Zauber
‘the magic’
der Schuh
‘the shoe’
das Fach
‘the compartment’
die Kenntnis
‘the knowledge’

das Zauberwort
‘the magic word’
der Wortzauber
‘the word enchantments’
der Schuhfach
‘the shoe compartment’
die Fachkenntnis
‘the knowledge of the trade’

What determines the gender of a German compound noun? How might these compounds be internally structured? Does this change your analysis of the –chen? Would you classify the diminutive suffix as an inflectional morpheme, a derivational morpheme, or something else? Justify your answer.
Part II: Fun with Phrases

A. Let’s look at some more involved German DPs. (1-8) below are in the nominative case.

(1) die kleine Maus  ‘the small mouse’
(2) das alte Schwein  ‘the old pig’
(3) die blauen Häuser  ‘the blue houses’
(4) der kranke Gans  ‘the sick goose’
(5) braver Hund  ‘good(well-behaved) dog’
(6) brave Katze  ‘good cat’
(7) altes Schwein  ‘old pig’
(8) blinde Hunde  ‘blind dogs’

(9-16) are the accusative realizations of the DPs above, while (17-24) are in the dative, and (25-32) are in the genitive.

(9) die kleine Maus  (17) der kleinen Maus  (25) der kleinen Maus
(10) das alte Schwein  (18) dem alten Schwein  (26) des alten Schweins
(11) die blauen Häuser  (19) den blauen Häuser  (27) der blauen Häuser
(12) den kranken Gans  (20) dem kranken Gans  (28) des kranken Gans
(13) bravem Hund  (21) bravem Hund  (29) braves Hundes
(14) brave Katze  (22) braver Katze  (30) braver Katze
(15) altem Schwein  (23) altem Schwein  (31) altes Schweins
(16) blinden Hunde  (24) blinden Hunde  (32) blinder Hunde

What can you say about case marking in German? How many different determiners does German have? It might be helpful to make a table of them. What about adjective endings? Make a table of the patterns you find here. You may need more than one to accurately capture all the data in this set.

B. Prepositions in German can also determine the case of the following DP. Case in German is marked by inflection of the determiner and noun, and in some cases, is reflected on the noun as well.

(1) von der kleinen Maus  ‘of the small mouse’
(2) für das alte Schwein  ‘for the old pig’
(3) gegen die Häuser  ‘against the houses’
(4) mit dem toten Pferd  ‘with the dead horse’
(5) von kranken Mäuser  ‘from sick mice’
(6) wegen des alten Märchens  ‘because of the old fairy tale’
(7) auf dem Hund  ‘on the dog’
Give glosses for the prepositions shown above. What case does each of these prepositions assign? How can you tell?

B. German has a process of extended modification in its DPs. Since English does not have this process, the glosses of the following forms are only approximate. The words that seem to correspond to verbs in the glosses below are derived from verb forms, but do not function as verbs.

Propose an analysis of these DPs. State anything out of the ordinary that you observe. If there is a problem with your current analysis, revise it.

Part III: A Few Verbs

The English translations of some of the adjectives in the previous section allude to the fact that they might be derived from another source. And indeed, they are. The following set of data shows this. Do not worry too much about the verb forms in (1-12) below, they are not extremely relevant to the problem.

1. Das Mädchen küsste die Ente. ‘The girl kissed the duck’
2. Die Maus stellte den Hund auf den Pferd. ‘The mice sat the dog on the horse’
3. Der Wolf jagte die Kätzchen. ‘The wolf chased the kittens’
4. *Das Seepferdchen gemachte Kaffee. ‘The seahorse made coffee’
5. Die Mutter schlagte das Schwein. ‘The mother hit the pig’

(6) Das Eichhörnchen wusste das Märchen.  ‘The squirrel knew the fairy tale’

(7) Die Mädchen küsssten die Ente.  ‘The girl kissed the duck’

(8) *Die Mäuse gestellten den Hund auf den Pferd.  ‘The mice sat the dog on the horse’

(9) Die Wolfen jagten die Kätzchen  ‘The wolves chased the kittens’

(10) Die Seepferdchen machte Kaffee.  ‘The seahorses made coffee’

(11) Die Mütter schlagten das Schwein.  ‘The mothers hit the pig’

(12) Die Eichhörnchen wussten das Märchen.  ‘The squirrels knew the fairy tale’

Given these sentences, what can you say about how the relevant forms in II.2 are created? How do you know that they must be adjectives and are not verbs? Remark on anything you find interesting.
Solution to the Problem

Part I: Nouns

A. Plural

German nouns don’t have a regular plural form, and there is really no reliable way of
guessing the plural form based on the either the gender of the noun in question or the
phonological shape of the noun. Nouns can be lumped into five distinct categories based on
what plural endings they take. This system is similar to the Latin declension classes, but on a
much simpler scale. The following are the basic plural morphemes.

1. No overt plural morpheme. Nouns (usually masculine ones) may undergo a vowel shift
   in their stem. Some representative examples of this plural morpheme are
   (i) der Apfel  die Äpfel
   (ii) das Märchen  die Märchen

2. Plural marked by –e, either with or without a stem vowel receiving an umlaut. Here,
   we can see this in
   (iii) der Hund  die Hunde
   (iv) die Stadt  die Städte

3. Plural ending in –er, again, with or without an umlauted vowel changing the quality of
   a stem vowel:
   (v) das Haus  die Häuser
   (vi) das Bild  die Bilder

4. Plural ending in –en or simply –n, depending on the final segment of the word.
   (vii) die Kröte  die Kröten

5. Plural ending with –s. This is often the plural given to loanwords like the word for cell
   phone, below:
   (viii) das Handy  die Handys

B. Diminutives

The diminutive suffix here is –chen. There are also some phonological processes at play
here. Not only does this suffix affix itself to the ends of words, if the word ends in a schwa, that
schwa will be deleted. It also seems that this affix also fronts the vowel closest to it in the stem if
that vowel is indeed able to be fronted. We can look at a simple “derivation” below, where we
see the final vowel of Katze deleted, and the /a/ fronted:
Another thing worthy of note is the diminutive affix’s ability to change the gender of the noun in question. No matter what the gender of the stem noun, the resulting noun with the diminutive suffix will be neuter. The first three ungrammatical forms in this data set are due to this fact. They are associated with the wrong determiners, which are the source of their badness. Their forms should be:

- das Mäuschen
- das Fischchen
- das Bärtchen

In regard to ungrammatical forms like *Eichhörnchen, we can chalk this up to phonological processes (haplology) disallowing two identical morphemes from occurring next to each other. It is probably safe to say that these forms were historically formed from the diminutive being attached to a root, but over time, the roots became more oblique, thus creating singular words that do not have the diminutive reading, but whose historical background prevents them from taking a further diminutive suffix.

C. Some Compounds

Here, it might be interesting to ponder the question of gender in nouns. It seems that this is not an inherent property of the determiner, but rather of the noun itself. And it seems that some stems, as in the case of the diminutive, can also act as a sort of stem, effectively controlling the spellout of the gender on the noun it attaches to. This morpheme seems to behave neither like an inflectional nor a derivational morpheme, but more like a root itself. In the few examples that are given, we find that the gender of compounds is based on the linearly left-most element of the compound. Thus, a compound of der Zauber, the magic and das Wort meaning magic word, and compounded Zauberwort, would have the definite article das. Conversely, if we were to compound these two nouns the other way around and instead come up with Wortzauber, the corresponding article would be der. If I had to venture a guess at some sort of structure, I might produce something like those below:

Part 2: Fun with Phrases
A. The relevant tables of adjective endings for this section of the problem, and for the next section, are given below:

\[
\begin{array}{|c|c|c|c|c|}
\hline
& \text{Masc} & \text{Fem} & \text{Neut} & \text{Plural} \\
\hline
\text{Nom} & \text{der} & \text{die} & \text{das} & \text{die} \\
\hline
\text{Acc} & \text{den} & \text{die} & \text{das} & \text{die} \\
\hline
\text{Dat} & \text{dem} & \text{der} & \text{dem} & \text{den} \\
\hline
\text{Gen} & \text{des} & \text{der} & \text{des} & \text{der} \\
\hline
\end{array}
\]

\[
\begin{array}{|c|c|c|c|c|}
\hline
& \text{Masc} & \text{Fem} & \text{Neut} & \text{Plural} \\
\hline
\text{Nom} & -e & -e & -e & -en \\
\hline
\text{Acc} & -en & -e & -e & -en \\
\hline
\text{Dat} & -en & -en & -en & -en \\
\hline
\text{Gen} & -en & -en & -en & -en \\
\hline
\end{array}
\]

\[
\begin{array}{|c|c|c|c|c|}
\hline
& \text{Masc} & \text{Fem} & \text{Neut} & \text{Plural} \\
\hline
\text{Nom} & -e & -e & -es & -e \\
\hline
\text{Acc} & -en & -e & -es & -e \\
\hline
\text{Dat} & -en & -er & -en & -en \\
\hline
\text{Gen} & -es & -er & -es & -er \\
\hline
\end{array}
\]

B. The glosses and cases determined by the prepositions in this section are summarized below:

- \textit{von}: of, for. Assigns dative case.
- \textit{mit}: with. Assigns dative case.
- \textit{auf}: on or upon. When used in the sense of ‘on’, the case marked in dative. When used in the sense of ‘onto’, the relevant case is accusative.
- \textit{gegen}: against. Assigns accusative case.
- \textit{wegen}: because of. Tricky. Assigns genitive case.

The cases here are able to be discerned by careful study of the three tables of adjective endings that are given as a helpful hint at the outset of this section.

B. Extended Modification in the DP domain

These DPs basically show some cool adjunct-y relationships in the syntax, and how concord works in relation to them. We can see that prepositional phrases (or maybe just the P head) seem to contain any instances of concord only within the immediate DP. Thus, as we can see from example (i) below and a potential corresponding tree, that two separate concord processes are allowed to happen within one overarching DP, but neither interfere with the case markings of the other. In the tree, I have labeled nodes with a ‘+nom’ that correspond to the nominative concord paradigm, and those that are part of a dative one, I have labeled with a ‘+dat’:
Part III: Some Verbs

This section deals with the same verbs that were seen as adjective-like forms in the previous section. Here, they are given in both the third person singular past and the first person plural past in order to both show a bit of the verbal morphology, and to point to an analysis of the forms that are given on page 4. The data obscures the real problem a bit, as there is more than one way to form these adjectives out of their corresponding verbs. However, from the forms given, we can see that to make adjectival elements out of verbs, they can be analyzed as taking the form of the past tense verb in the third person singular and adding a prefix ge- to the stem. However, the savvy learner of German might recognize these forms as the past participle and want to analyze them as verbs. It takes a keen eye to realize that these forms inflect for any relevant adjective endings, and are therefore not verbs, but rather, participial adjectives.

(i) die von dem alten Schwein geküsste Mutter